

THE DIRECTOR OF
CENTRAL INTELLIGENCE

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NOTE FOR THE DIRECTOR

SUBJECT: Factory Automation and Japanese
Competition

In case you missed it, the attached
article from the Wall Street Journal of
21 October contains an interesting account of
US efforts to meet Japanese competition in the
field of factory automation including robotics.




David Gries

STAT

GE Promotes Factory Automation, But Some Doubt Big Market Exists

By LAURA LANDRO

Staff Reporter of THE WALL STREET JOURNAL

NEW YORK—"Automate, emigrate or evaporate." That's what General Electric Co. executives have repeatedly been preaching these days to their own company and to potential customers. GE calls its "most important undertaking of the century" the retooling of its own and other American factories into automated plants of the future.

GE has spent more than \$1 billion automating its factories, which make dishwashers, jet engines, locomotives, toaster ovens and a lot of other things. GE also has spent \$500 million over the past two years to acquire other concerns in factory automation.

The idea is to automate GE's own plants and to sell automation to other manufacturers. GE recently formed a "factory automation planning service" to deliver to corporate customers the plans and specifications for making their plants modern with numerical controls, robots, computers for design and manufacturing, automated order entry, warehousing systems and other innovations.

Some Are Skeptical

The market for factory automation products and services will amount to about \$4 billion this year, and John Welch, GE's chief executive officer, says he expects the market to grow to \$30 billion by 1990. He wants GE to sell at least 25% of that market. Some people are skeptical of GE's grandiose view, however. Labor unions are resisting any loss of jobs to automation. Some automation experts question whether the market, or "megamarket," as Mr. Welch calls it, will grow as he expects—anytime soon, at least. They and others observe that economics are encouraging companies to close, not modernize, inefficient plants.

"GE got all geared up to sell the factory of the future from A to Z and then ran smack into a wall of no capital spending," says Laura Conigliaro, a securities analyst at Bache Halsey Stuart Shields Inc. Says Robert Cornell, who analyzes GE for Paine Webber Inc.: "The factories that GE is targeting as its market are in many cases so inefficient that they aren't worth salvaging." Also, he says, practically no new factories are being built now.

Japanese competitors have taken a large lead in factory automation, experts say. "Manufacturing people are still playing second and third fiddle in U.S. companies," says Wickham Skinner, a Harvard business school expert on production and operations management. "Internal reward systems here discourage the kinds of risk that are presented by GE's pitch for automating a factory."

Understanding the Risk

Robert Hayes, an associate of Prof. Skinner at Harvard, says GE's plan shows long-range vision. "It might be the catalyst we need to get industry started," he says, but "the market might not be moving as fast as GE hopes."

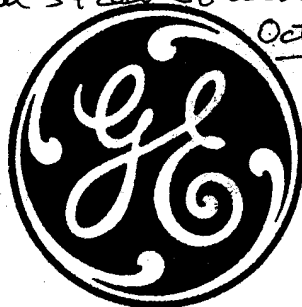
GE executives say they understand the risk. Potential customers "aren't lining up outside our door," says Arthur Taylor who heads the factory automation planning service. The question, he says, is "will we be

utilized, and has GE arrived at this position at the right time?"

An established supplier of industrial electronics, GE has yet to become the industry's leader. GE industrial electronic sales were \$1.4 billion last year, but Mr. Cornell, of Paine Webber, predicts that the business will lose \$40 million, before taxes, this year. James Baker, GE executive vice president, will say only that results "will be a bit in the negative this year." GE says Mr. Cornell's estimates are incorrect.

GE's promotion of the "Factory With a Future" is "all a big hype," Mr. Cornell says. Miss Conigliaro of Bache says, "I'm not sure even GE believes it will get a whole

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lot of business right away from companies wanting to buy the whole factory-of-the-future concept. I think GE is just trying to pick up as much important business as possible."

Computers and Robots

For all the skepticism, GE has made an impressive attempt to expand in factory automation. Over the past two years, GE has acquired Calma, a computer graphics concern, and Intersil, an integrated circuitry company. GE has entered into a venture with Structural Dynamics Research Corp. to design and sell programming for computer-aided engineering. Now GE can offer computer-aided design and manufacturing services critical to the automation of manufacturing.

GE has begun marketing a line of robots for assembly, painting, welding and processing work. The company has developed advanced optoelectronics to permit robots to "see" electronically, and it has developed programmable controls for machine tools. GE considers its new GENet, a local communications network for signalling and data-sharing between computers and other industrial electronics equipment, as "the spinal cord and central nervous system of an automated factory."

Taken together, GE's new products, services and corporate acquisitions give the company marketing clout it lacked before, Mr. Baker says. "The thing we've got now

that no one else has," he says, "is the ability to go into a plant and tell the factory manager how to automate, what sequence he should do it in, what the cost will be and when the payback will come."

Still there's plenty of competition. It comes from smaller companies such as Unimation Inc., which supplies robots, as well as industrial giants such as Siemens and Westinghouse Electric, and more than 100 other companies supplying a wide array of products and services for automation.

GE is relying on the success of its own automation as a marketing tool. It now has more than 200 robots at work in its plants, and it will employ 1,000 by 1984. Mr. Baker says GE can show customers GE itself is willing to take investment risks in automation even when business is bad. In GE's appliance plant in Louisville, Ky., for example, the company is spending \$38 million to automate, even though the appliance business is in a slump. GE is spending \$300 million, despite a poor market, to automate production lines at its Erie, Pa., locomotive plant.

"We can show other companies how to do as we are, to automate piece by piece, but in such a way that each piece is a building block," Mr. Taylor says.

To sell customers on GE's automation expertise, GE jets them on visits to GE's own plants. GE spent \$3 million on a futuristic automation display at the recent Machine Tool Show in Chicago. When customers wince at the cost of automation, GE's credit subsidiary stands ready to finance by buying equipment and leasing it back. "Our emphasis is that it pays for itself as you go," Mr. Taylor says.

GE's Incentive

Despite discussions with officials of 75 companies, GE's factory automation group is working on only nine firm projects, four of them in GE's own plants. Mr. Taylor says 12 other proposals are outstanding. "No single company has said they aren't highly interested," Mr. Taylor says. "I wish I could say they can't afford to wait another day, but many of them don't have any cash, and they don't have an alternative."

GE has a powerful incentive to automate itself. An internal study shows that half its assembly line employees, for example, could be replaced by automation. But, says Joseph Egan, chief negotiator for the International Union of Electrical, Radio and Marine Workers GE's largest union, "GE has another think coming if they think they won't have to deal with the human element. We aren't going to stand by and see people forced out of work."

GE already has guaranteed considerable job security for workers affected by automation, Mr. Baker says. "Labor has to accept it," he says. "We are willing to retrain wherever we can, or to help ease the move from unskilled to skilled jobs."

Prof. Skinner, of Harvard, says automation must eventually come to American factories. "The technology GE is pushing enables companies to make short production runs, change models quickly and offer a proliferation of products economically," he says. "That goes with the trends in today's marketing rather than against them, and in the end, that will sell companies on automation."